

Tonya R. Moon

The Role of Assessment in Differentiation

With the increasing diversity in classrooms, teachers are faced with a broad range of students representing a wide variety of educational needs. To effectively address students' diverse education needs, teachers must engage in good decision making. This article explores the bidirectional relationship between differentiation and assessment through the lens of decision-making. Particularly, the article investigates the 3 phases of assessment—planning instruction, guiding instruction, and evaluating instruction. It also asks 4 questions: Why does assessment matter? What happens if it is misaligned with learning goals? How does the teacher use the assessment data? What does it look like? The article concludes with a summary of the 3 principle building blocks of differentiation—active learning, high expectations for students, social context of learning—and their implications for assessment.

Any teaching act is the result of a decision, whether conscious or unconscious, that the teacher makes af-

ter the complex cognitive processing of available information. This reasoning leads to the hypothesis that the basic teaching skill is decision making. (Shavelson, 1973, p. 18)

ALTHOUGH SHAVELSON HIGHLIGHTED the importance of decision making in teaching, he also emphasized that decision making occurs after the complex cognitive processing of available information. Thus, there is a connection between information and decision making. Although pointing out this connection seems obvious, it is important to note that different types of decisions require different types of information. How do teachers obtain information they will use to make decisions and how does that information allow a teacher to differentiate instruction?

Historically, assessment has been primarily used for determining placement of students, assigning grades, promotion to the next grade, or graduation. Current thinking has evolved to understand that student performance is at least a partial reflection of the quality of the curriculum and instruction. As a result, to meet the goals of education, there must be a tight alignment among curriculum, instruction, and assessment.

Assessment is appropriately seen as the process of observing student learning by collaborating with students to collect and interpret data

Tonya R. Moon is an Associate Professor at the University of Virginia's Curry School of Education.

Requests for reprints can be sent to Tonya R. Moon, Curry School of Education, University of Virginia, 405 Emmet Street South, P.O. Box 400277, Charlottesville, VA 22903. E-mail: trm2k@virginia.edu

about their academic strengths and weaknesses, interests, and learning preferences, with the goal of making decisions that benefit their instruction. Integral to a teacher making good decisions is the use of high-quality data. Two major concepts that affect the quality of data used by a teacher to make decisions are validity and reliability. The reliability of data obtained from an assessment is evident in how consistently the assessment produces the same information about a child. The concept of reliability goes hand in hand with the concept of validity. The validity of data is dependent on the accuracy and fairness of the decisions resulting from use of the data. The validity of an assessment in any classroom context focuses on making pedagogically sound and defensible decisions about students' learning. In essence, validity is determined by evaluating the appropriateness of decisions made with reliable data.

To obtain reliable and valid data for any classroom assessment, several questions should be asked: (a) Will the assessment allow students to demonstrate mastery of identified learning goals? (b) Is the assessment reflective of key concepts, skills, or processes under study? (c) Is the assessment congruent with the types of instructional methods used? (d) Will the assessment modality (e.g., performance assessment, multiple-choice, short answer) allow all students to demonstrate their knowledge and understanding of the identified learning goals?

It is important to remember that each instructional decision may result in positive or negative consequences for students, although those consequences will differ in degree of seriousness. For example, making a decision to fail a student based on inappropriate, unreliable, or invalid data can lower a student's chance for enrolling in advanced level coursework—a serious consequence. On the other hand, deciding to assign a student a particular set of math problems and then, midprocess, realizing that the decision was incorrect and modifying the assignment accordingly is a less serious consequence. This is the case because instruction can be adjusted and the effects on the student are minimal, resulting in a less serious consequence. High-quality information (or data) leads to effective decision making, and it is the professional re-

sponsibility of each teacher to collect the highest-quality assessment information to use to make decisions. It is also essential for teachers to be willing to adjust in midprocess if later evidence suggests the need. Such decisions should be based in large measure on good assessment data, rather than on casual observation and instinct.

Differentiation Requires Decision Making

Teachers face classrooms that are composed of a broad range of students, representing a wide variety of educational needs. One response to addressing students' varied academic needs is the philosophy of differentiation. As defined by Tomlinson (2001), differentiation is the recognition, articulation, and commitment to plan for students' differing needs. This philosophy becomes even more important and necessary in today's classrooms. To be successful in the 21st century, all students must have not only knowledge and understanding of content, but also the capacity to think critically, analyze, synthesize, and make inferences.

Biggs (1999) defines instruction as "a construction site on which students build on what they already know" (p. 72). The role of the teacher is to serve as the foreman of this construction site. However, to effectively plan and implement differentiated instruction, teachers must engage in informed decision making. Such teachers consider a myriad of instructional approaches and resources based on preidentified instructional goals and objectives and guided by worthy assessment data revealing student need throughout the course of construction. In a differentiated classroom, informed decision making involves a teacher focusing on what to teach, how best to teach it, and how to assess the students' proficiency with what was taught, while giving attention to students' varying readiness levels, interests, and learning profiles.

The Integration of Differentiated Instruction and Assessment

Although one goal of assessment should be to develop a partnership for learning among stu-

dents, parents, and teachers, there are instructional decisions that rest squarely on the shoulders of a teacher. These decisions fall into one of three phases in which assessment is integral: (a) planning instruction (the preassessment phase); (b) guiding instruction (the ongoing or formative assessment phase); and (c) evaluating instruction (the summative assessment phase). Delineating the phases of instruction and the types of decisions made at each phase allows for understanding the link between differentiated instruction and assessment. It is also important to note that assessment data gathered, regardless of the phase, are only helpful in improving instruction when teachers are willing to modify their practices based on the data. For each of the three phases identified, the following questions are explored: (a) Why does it matter? (b) What happens if there is a misalignment with identified learning goals? (c) How does a teacher use the data collected? and (d) What does it look like?

Phase One Assessment: Planning Instruction

Planning Instruction involves making decisions about what to teach, and assists teachers in determining students' needs relative to the "what"—whether the "what" is content, processes, skills, or any combination of the three.

Why does it matter? Assessment decisions during this first phase help determine where students' needs are, relative to specific objectives—what they should know, understand, and be able to do; student interests; and learning profiles or cognitive preferences that might affect student learning. High-quality preassessment data can facilitate a teacher's differentiating instruction by establishing instructional baselines regarding students' levels of skill, knowledge, and understandings; students' interests related to what is being taught; and other conditions (e.g., cognitive style) that affect how the instruction is carried out and consequently affect student learning. That is, preassessment data allow a teacher to start a new instructional unit that begins where students are

and ends at appropriately challenging outcomes. This data-informed instructional planning means that time is not spent repeating previous learning (unless intentional review is part of the plan for a specific instructional reason), and allows a teacher to avoid overlooking deficits or gaps in prerequisites that might impair student progress in an area of study.

What happens if there is a misalignment?

In the absence of carefully collected preassessment data, or if the preassessment itself is misaligned with identified instructional goals and objectives, the teacher may make erroneous decisions about where to start the instructional sequence. The teacher may start with assumptions of mastery and, as a result, overlook students' deficits, gaps, or required prerequisites. Or the teacher may provide instruction on what the students' have previously mastered, thus missing the opportunity to extend learning for students. These erroneous assumptions may result in a misalignment that could put instructional decisions in conflict with objectives, goals, and intended outcomes. In other words, the teacher may get off course.

How does a teacher use the data? Although preassessments can take various forms (e.g., observations, test results, portfolios, interviews) depending on learning goals and the developmental levels of learners, there are common attributes to all preassessments: (a) They should be aligned with specific objectives that may come from standards, curriculum guides, a scope and sequence, instructional goals, or a teacher's knowledge of a discipline, (b) they occur prior to instruction, providing sufficient time for a teacher to analyze the data to make instructional modifications (i.e., collect different resources, eliminate, enhance, or scaffold an entire instructional plan); and (c) they need not be time consuming for students to complete or for a teacher to analyze. A preassessment need only provide a teacher with necessary information to start the instructional sequence by highlighting general patterns of students' needs. It is not the intent of preassessment to anticipate the specific students'

needs that might be uncovered during instruction (see Phase Two).

Specific decisions made using preassessment data address the questions of: Which student(s), if any, have partial or full mastery of the identified learning goals (students' readiness levels)? Do certain topics hold special interests for students that might be taken into account through upcoming content, process, or product (students' interests)? In what ways do students interact with the targeted learning goals so that they can make individual meaning of the goals (students' learning profiles)?

As a result of analyzing these data, the teacher determines where to streamline instructional time, and where additional support structures are necessary, and then begins to get information about the formation of student groups.

What does it look like? Keeping in mind the common attributes identified earlier for all preassessments and the various forms they may take, it is important that a teacher ensure that targeted objectives are aligned both vertically and horizontally. Vertical alignment occurs across grade levels and focuses on levels of a concept. Horizontal alignment of targeted objectives allows teachers to deliver instruction in a logical sequence that makes sense to the discipline relative to students' readiness levels, interests, and learning preferences.

Using preassessment does not mean adjusting instruction to every possible difference among students. However, careful preassessment data do hold the potential to reveal general trends across a group of students that may exist and may ultimately be addressed to improve the effects of instruction. This would allow the teacher to put instructional energy into ameliorating students' weaknesses, and avoid the reteaching of already mastered knowledge, understandings, and skills.

Phase Two Assessment: Guiding Instruction

For the second phase, Guiding Instruction, Lambdin and Forseth (1996) provide some insight

into the relationship between assessment and instruction. "Teachers orchestrate a variety of classroom activities designed to help students learn, but even in the midst of this orchestration they must constantly gather information to make decisions about when to move on, stop, or change direction ..." (p. 298). Gathering data during an instructional sequence allows teachers to make in-process decisions about students' levels of mastery, misconceptions, insights, and resulting needs.

Why does it matter? When teachers make these adjustments during instruction, they do so on the basis of formative assessment or ongoing assessment. "The main purpose of formative observations is to determine the degree of mastery of a given learning task and to pinpoint the part of the task not mastered" (Bloom, Hastings, & Madaus, 1971, p. 61). Because students do not progress at the same rate and in the same patterns, it is necessary to use carefully collected data to make adjustments during the instructional sequence for students to better understand and assimilate new material into their existing frameworks.

What happens if there is a misalignment? In the absence of carefully collected ongoing assessment information, the teacher makes the assumption that all learners are the same. This assumption leads to erroneous decisions that may (a) prevent students from mastering the intended learning objectives, (b) disengage students from the process of learning because the materials are not accessible to them, (c) result in negative student behaviors or attitudes, or (d) propagate the achievement gap. To avoid these negative consequences, it is important that information collected during instruction be tightly tied to the explicit goals of the instructional sequence being implemented.

How does the teacher use the data? Assessment during instruction is useful to determine which students are moving satisfactorily toward identified learning goals. If progress is satisfactory for all students, then no instructional modifi-

cations are needed. If progress for most students is satisfactory, but a few students are falling behind, then modification through differentiation is needed to provide the necessary scaffolding for those falling behind and for those exceeding expectations. If progress for most students is unsatisfactory, then substantial instructional modifications through differentiation may need to be made, because it is clear that the approach taken is not working.

Specific decisions made during this second phase of instruction address these questions: Which student(s), if any, have mastery or partial mastery of the content or process that a given lesson is emphasizing (students' readiness levels)? Are students' engaged with the materials being addressed (students' interests and learning profiles)? Students need feedback during this phase to monitor their own success, and to know what steps they need to take to improve. This feedback facilitates students in becoming more self-directed learners.

What does it look like? Formative assessment can take various forms (e.g., paper-and-pencil tests, students' work samples, students' discussions and questions). Regardless of the form of assessment, each should focus on the current learning goals under study, and the data collected should inform decisions made regarding whether it is necessary to reteach or extend learning goals—and for whom. In addition, teachers may use information gathered through formative assessment to form (or reform) student groupings, modify pacing, or change the manner in which materials and content are presented to students.

Third Phase Assessment: Evaluating Instruction

In Evaluating Instruction, decisions concerning the effectiveness of the implemented instruction are made based on students' level of mastery of the identified learning goals and objectives, and include grading.

Why does it matter? This summative assessment phase provides information to the teacher about students' mastery of the content just studied. When instructional units are spiraled, or built on one another, the summative assessment in a concluding unit can serve as the preassessment for the upcoming unit, therefore allowing the teacher to anticipate students' readiness for what will come next.

Carefully collected data also provide information to stakeholders (e.g., students, parents, administrators) about students' levels of mastery of the instructional objectives, frequently in the form of grades. On the surface, differentiation and grading seem to have an adversarial relationship. However, to be effective they both require clarity and focus on preidentified knowledge, understandings, and skills for which students are accountable. They share a need for reliable and valid data, and have a common goal of enhancing learning. Thus, there is no inherent conflict between differentiation and assessment.

What happens if there is a misalignment? Misalignment of a summative assessment with an instructional unit's learning goals can have two significant effects: (a) Students may unfairly benefit from substanceless but attractive products; and (b) students may be unfairly penalized because they are held accountable for information that they have not been adequately taught.

How does a teacher use the data? Data collected during the final phase allow the teacher to make evaluative decisions involving student learning (mastery of identified learning goals and objectives) and the effectiveness of one's teaching.

Specific decisions made regarding student learning address the questions: To what degree has each student mastered all of the identified learning goals? Are there patterns within individual students' mastery that suggest "error" in the teaching process or a collective misunderstanding of the learning goals that may have arisen through this process? To what degree do particular students still need additional work with the learning goals?

Teachers can also use this type of assessment information to reflect on the effectiveness of their instruction. For example, if results indicate that all students have acquired the knowledge and skills regarding identified learning goals, the teacher has evidence that the instructional approaches used in the unit were effective in promoting student learning. If, on the other hand, results suggest that several, or the majority, of students' did not obtain a sufficient level of mastery of the identified learning goals, the teacher has evidence that modifications in the instructional sequence are warranted.

What does it look like? By definition, summative assessment occurs after instruction has concluded and can take various forms, ranging from paper-and-pencil tests to performance assessments or portfolios. Although there is a vast array of possible formats, all postassessments should be aligned with intended learning goals. Alignment provides information about students' mastery of targeted learning goals and objectives, and can be used by the teacher for grading purposes. The results of summative assessment can also provide insight for students on what they do well, the degree of skill that they have in an area, and in what areas they may need additional work. In all instances, students are facilitated in becoming self-reflective learners.

The intent of assessment in each phase of instruction is to help the teacher make decisions about the best approach to instruction for students. When a teacher assesses students' strengths and weaknesses, the teacher uses that information to make decisions about where instruction should begin, or on which particular learning goals to focus. When a teacher assesses students' progress during instruction, the teacher uses that information to decide what parts of the instructional sequence needs to be altered. When a teacher assesses students to help assign grades, the teacher uses that information to determine: (a) which grades are assigned to students based on attainment of identified learning goals, and (b) whether the instructional sequence needs to be adapted or overhauled for the next time. The main function of assessment

is to improve the quality of the instructional decisions that are made for student learning.

Strengthening the Link Between Differentiated Instruction and Assessment

A key principle of differentiation is that all students are moving toward the same instructional objectives. Some students will move at a quicker pace or with greater independence; others will move with more foundational tasks or tasks structured with greater support mechanisms. In either case, allowing for the appropriate scaffolding or different avenues for students does not change the primary focus of a differentiated classroom—appropriately challenging knowledge, skills, and understandings as the basis for instruction, assessment, and grading.

There are building blocks of differentiation that have implications for assessment. The following three are discussed: (a) Learning is active; (b) high expectations exist for all students with scaffolding to support success; and (c) learning occurs in a social context.

The first principle of differentiation that has implications for assessment is that learning is active rather than passive. Constructivist views of the learning process emphasize the importance of active learning to link new experiences and ideas into existing schema (Bransford, Brown, & Cocking, 2000; Brooks & Brooks 1999). To learn something is not just to sit passively and take in information. Rather, learning is reflective, constructed, and self-regulated (e.g., Bransford & Vye, 1989; Wittrock, 1991). Recent findings from the National Study Group for the Affirmative Development of Academic Ability (2004) suggest that the quality of the instructional sequence—including assessment as a natural part—has direct bearing on students' ability to learn. Inherent in these findings is the strong case for active, inquiry-based learning.

In a differentiated classroom, multiple avenues are provided for students to engage with new information, make sense of it, and demonstrate their

level of mastery of this new information. Building on the knowledge that classroom communities are diverse, the teacher can use carefully collected preassessment data to better understand that academic diversity. The teacher uses frequently collected formative data to better understand how students make sense of new information. Students' demonstration of their level of mastery is obtained through the summative assessment information that matches the instructional objectives. Allowing for multiple approaches to content, process, or product from an instructional standpoint also allows for multiple approaches from an assessment standpoint.

The second principle of differentiation that has implications for assessment is that all students are held to high expectations. Learning is an ongoing process during which students receive new information, interpret it, and connect it to what they already know and to the experiences they have already had. This results in a reorganization and revision of the student's internal conceptions of the world (National Research Council, 2001). Although assessment contexts may vary, the expectations that all students will achieve mastery of the intended learning goals never waver. To accomplish mastery, the teacher provides whatever support is necessary—increasing structure, varying resources use, modifying the complexity of the context, and so on. These variations are made in response to carefully collected preassessment and formative assessment data.

The third principle of differentiation that has implications for assessment is the recognition that learning occurs in a social context. In a differentiated classroom, there is a balance between individual and collaborative opportunities for students to make sense of new information. These same opportunities—individual and collaborative—can be offered in an assessment context to allow students to demonstrate what they have learned, providing that there is also individual accountability for the purpose of grading. Authentic assessments offer a natural way to provide for the individual student, as well as for group accountability. Such assessments more easily accommodate student differences. Often, authentic tasks are more intrinsically appealing to students than paper-and-pencil assessments.

These assessments require that meaning extend beyond the assessment context, thus helping students to make connections with content beyond the sometimes artificial classroom context.

Conclusion

Assessment is vital to the success of a differentiated classroom. There are dynamic relationships between differentiated instruction and assessment. That is, there are bidirectional relationships between the two such that each informs the other. Assessment contributes information about the intended learning goals, shapes where a teacher begins in the instructional sequence, provides data about necessary modifications for students to better access the learning experience, dictates what matters for grades and reporting to parents, and informs the learners themselves. In short, well-executed assessments at the preassessment, formative, and summative phases play a pivotal role in how instruction comes to be differentiated to meet learners' varied readiness, interests, and learning preferences. Educators seeking to create a differentiated classroom community should start with carefully constructed, purposely executed assessments, and should use the resulting information to inform the instructional sequence so all learners have the support and opportunities needed for success.

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